

WE CLAIM:

1. A peptide having an amino acid sequence selected from the group consisting of:
RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1);
RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2);
RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);
RVVRVVRRVVRR (SEQ ID NO:4)
RRVRRVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 5);
VRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 6);
RRVRRVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:7);
RVVRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:8);
RVVRVVRRWVRR (SEQ ID NO:9);
RRVRRVRRVWRRVVRRVVRRWVRR (SEQ ID NO:10);
VRRVWRRVVRRVVRRWVRRVRRVWRRVVRRVVRRWVRR (SEQ ID NO:11);
and RVVRVVRRWVRRVRRVWRRVVRVRRWVRRVRRVWRRVVRRVVRRWVRR (SEQ ID NO:12).
2. The peptide of claim 1 having the amino acid sequence:
RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1).
3. A composition comprising the peptide of claim 2 and a carrier.
4. The peptide of claim 1 having the amino acid sequence:
RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2).
5. A composition comprising the peptide of claim 4 and a carrier.
6. The peptide of claim 1 having the amino acid sequence:
RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3).

7. A composition comprising the peptide of claim 6 and a carrier.
8. The peptide of claim 1 having the amino acid sequence:
RVVRVRRRVVRR (SEQ ID NO:4)
9. A composition comprising the peptide of claim 8 and a carrier.
10. The peptide of claim 1 having the amino acid sequence:
RRVRRRVRRVRRVRRVRRVRRVRR (SEQ ID NO: 5).
11. A composition comprising the peptide of claim 10 and a carrier.
12. The peptide of claim 1 having the amino acid sequence:
VRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRR (SEQ ID NO: 6).
13. A composition comprising the peptide of claim 12 and a carrier.
14. The peptide of claim 1 having the amino acid sequence:
RRVRRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRR (SEQ ID NO:7);
15. A composition comprising the peptide of claim 14 and a carrier.
16. The peptide of claim 1 having the amino acid sequence:
RVVRVRRRVRRRVRRRVRRRVRRRVRRRVRRRVRRRVRRRVRR (SEQ ID NO:8).
17. A composition comprising the peptide of claim 16 and a carrier.
18. The peptide of claim 1 having the amino acid sequence:
RVVRVRRWVRR (SEQ ID NO:9).
19. A composition comprising the peptide of claim 18 and a carrier.
20. The peptide of claim 1 having the amino acid sequence:
RRWRRRVRRVRRVRRVRRWVRR (SEQ ID NO:10).
21. A composition comprising the peptide of claim 20 and a carrier.

22. The peptide of claim 1 having the amino acid sequence:
VRRVWRRVVRVRRWVRRVRRVWRRVVRVRRWVRR (SEQ ID NO:11);
23. A composition comprising the peptide of claim 23 and a carrier.
24. The peptide of claim 1 having the amino acid sequence:
RVVRVRRWVRRVRRVWRRVVRVRRWVRRVRRVWRRVVRVRRWRVV (SEQ
ID NO:12).
25. A composition comprising the peptide of claim 24 and a carrier.
26. The peptide of claim 1 wherein said peptide has antimicrobial activity.
27. The peptide of claim 1 wherein said peptide has antimicrobial activity in low salt.
28. The peptide of claim 1 wherein said peptide has antimicrobial activity in physiologic salt.
29. An LLP-1 peptide analog wherein said peptide is modified to optimize amphipathicity.
30. An LLP-1 peptide analog, said peptide comprising an arginine residue on said peptide's charged face, wherein said arginine residue is substituted with another amino acid residue and wherein said peptide analog comprises an amphipathic α -helical structure.
31. An LLP-1 peptide analog, said peptide comprising a tryptophan residue on said peptide's hydrophobic face, wherein said tryptophan residue is substituted with another amino acid residue and wherein said peptide analog comprises an amphipathic α -helical structure.
32. An LLP-1 peptide analog, said peptide comprising a valine residue on said peptide's hydrophobic face, wherein said valine residue is substituted with another amino acid residue and wherein said peptide analog comprises an amphipathic α -helical structure.
33. An LLP-1 peptide analog, said peptide comprising a tryptophan residue and a valine residue on said peptide's hydrophobic face, wherein said tryptophan residue and said valine

40. A peptide-cargo complex comprising a cargo and a peptide selected from the group consisting of:

RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1);

RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2);

RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);

RVVRVRRRVVRR (SEQ ID NO:4);

RRVRRVRRVRRVRRVRRVRR (SEQ ID NO: 5);

VRRVVRVVRVRRVRRVRRVVRVRRVRR (SEQ ID NO: 6);

RRVRRRVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:7);

RVVRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRRVRR (SEQ ID

NO:8); RVVRVRRWVRR (SEQ ID NO:9); RRWVRRVRRVWRRVVRVRRWVRR (SEQ

ID NO:10); VRRVWRRVVRVVRWVRRVRRVWRRVVRVVRWVRR (SEQ ID NO:11);

and RVVRVVRWVRRVRRVWRRVVRVVRWVRRVRRVWRRVVRVVRWV (SEQ ID NO:12).

41. The peptide-cargo complex of claim 40 wherein said peptide has antimicrobial activity and said cargo increases the antimicrobial activity of said peptide.

42. A method for inhibiting the growth of a microbe comprising administering to a mammalian cell a microbial growth inhibiting effective amount of at least one peptide selected from the group consisting of:

RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1);

RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2);

RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);

RVVRVRRRVVRR (SEQ ID NO:4);

and RVVRVRRWVRRVRRVWRRVVRVRRWVRRVRRVWRRVVRVRRWRVV (SEQ ID NO:12).

RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1);
RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2);
RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);
RVVRVVRRVVRR (SEQ ID NO:4);
RRVVRVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 5);
VRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 6);
RRVVRVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:7);
RVVRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID
NO:8); RVVRVVRRWVRR (SEQ ID NO:9); RRWVRVRRVWRRVVRRVVRRWVRR (SEQ
ID NO:10); VRRVWRRVVRRVVRRWVRRVRRVWRRVVRRVVRRWVRR (SEQ ID NO:11);
and RVVRVVRRWVRRVRRVWRRVVRRVVRRWVRRVRRVWRRVVRRVVRRWVRR (SEQ
ID NO:12).

52. The method of claim 51 wherein the mammalian cell is a human cell.
53. The method of claim 52 wherein the human cell is a peripheral blood monocyte.
54. A method of inhibiting growth of a microbe in a subject comprising contacting a cell of the subject with a microbial growth inhibiting effective amount of at least one peptide selected from the group consisting of:

RVIRVVQRACRAIRHIVRRIRQGLRRIL (SEQ ID NO: 1);

RVIRVVQRACRAIRHIVRRIRQGLRRILRVV (SEQ ID NO: 2);

RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);

RVVRVVRRVVRR (SEQ ID NO:4);

RRVRRVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 5);

VRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 6);

RWIRVVQRWCRAIRHIWRRIRQGLRRWLRVV (SEQ ID NO: 3);
RVVRVVRRVVRR (SEQ ID NO:4);
RRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 5);
VRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO: 6);
RRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:7);
RVVRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRRVVRR (SEQ ID NO:8);
RVVRVVRRWVRR (SEQ ID NO:9); RRWVRRVVRRVVRRVVRRWVRR (SEQ ID NO:10);
VRRVWRRVVRRVVRRWVRRVVRRVVRRVVRRWVRR (SEQ ID NO:11);
and RVVRVVRRWVRRVVRRVVRRVVRRWVRRVVRRVVRRWVRRVVRRWVRR (SEQ ID NO:12).

64. The method of claim 63 wherein the subject is human.
65. The method of claim 64 wherein the cell is a peripheral blood monocyte.